REMARKS

By this Amendment, claims 20-26 are cancelled, and claim 16 is amended. Claims 17-19 remain in the application. Thus, claims 17-19 are active in the application. Reexamination and reconsideration of the application are respectfully requested.

Minor editorial revisions were made to the substitute specification submitted with the February 9, 2004 Amendment. The Applicant submits that no new matter was added via such revisions.

In item 2 on page 2 of the Office Action, claims 16-17, 19-21 and 23 were rejected under 35 U.S.C. § 102(b) as being anticipated by Ruff et al. (U.S. 5,675,769). This rejection is believed to be moot with respect to claims 20-21 and 23 in view of the cancellation of these claims. Without intending to acquiesce to the Examiner's rejection of claim 16, claim 16 has been amended in order to clarify the clear distinctions between the present invention and the applied references. Accordingly, the Applicant respectfully submits that the present invention is clearly patentable over the applied references for the following reasons.

The present invention provides a method and an apparatus for recording and reproducing digital data. The digital data recording/reproduction method of the present invention prevents the destruction of a file and the loss of data when an abend such as a power failure occurs. The present invention is able to prevent the destruction of a file and the loss of data when an abend occurs by constructing a file structure, when recording new data, on a disk recording medium in which recordable clusters are connected in advance of starting data recording. That is, the present invention connects a recordable area in advance of starting data recording for an indefinite required area when recording new data which is not yet recorded on a disk.

Accordingly, by connecting the recordable clusters in advance of when recording of the new digital data begins, when data recording is interrupted by an abend, such as a power failure, data which would have been recorded but for the abend remain as a part of the file, and therefore, the data file can be recorded or reproduced as if the abend never occurred.

Claim 16 recites a digital data recording/reproduction method for recording and reproducing digital data in units of clusters, which are the smallest unit of data recording on a disk recording medium. The method of amended claim 16 comprises, in part, constructing a file

structure, when recording new data, on the disk recording medium in which recordable clusters are connected in advance of starting data recording.

Ruff et al. discloses a method of manipulating disk partitions which are defined by a partition table. Ruff et al. discloses that the partition table is initially read from a disk and that the partition table may contain an RPI system indicator which indicates that an earlier attempt at partition manipulation was interrupted by a power failure (see Column 5, lines 60-66 and Column 9, lines 7-23). If the RPI indicator is present on the disk, a user is notified that the interrupted partition manipulation is being resumed, whereupon the partition is locked by the RPI to prevent other processes from accessing the partition while it is being manipulated (see Column 9, lines 36-40, and Column 10, lines 37-40 and lines 45-48). By placing the RPI in the selected partition, a host computer's operating system does not recognize the file system because of the RPI, and as a result, the operating system will not perform any processes on the partition while the partition is being manipulated. Accordingly, Ruff et al. discloses that, by essentially masking the partition through the use of the RPI, if a power failure occurs prior to the completion of the partition manipulation, the operating system of the host computer will not try to automatically fix the selected partition (see Column 11, lines 25-28).

The RPI manipulation method of Ruff et al. merely places a system indicator into a partition table which prevents external processes from accessing a partition while it is being manipulated. However, the RPI manipulation method of Ruff et al. is not disclosed, suggested or even contemplated as a method for constructing a file structure, when recording new data, on the disk recording medium in which recordable clusters are connected in advance of starting data recording, as recited in claim 16.

Ruff et al. also discloses a method of resizing disk partitions. The partition resizing method of Ruff et al. moves a selected partition's outer edge so as to increase or decrease the size of the partition. However, Ruff et al. specifically discloses that the partition resizing method "can be performed safely only when the partition has been changed into a recovery partition type by placement of the RPI on the disk 10" (see Column 14, lines 6-9). In other words, the partition resizing method of Ruff et al. specifically requires the RPI system indicator to be added in order to prevent the destruction of the partition, which is markedly different from a method for

constructing a file structure, when recording new data, on the disk recording medium in which recordable clusters are connected in advance of starting data recording, as recited in claim 16.

The partition resizing method of Ruff et al. also includes a characteristic determining step 194 which determines the size, location and system parameters of file system structures of remaining space on the modified partition in which the partition is to be enlarged to, i.e., positions on the disk which are reserved "for future growth" (see Column 19, 25-32). In the characteristic determining step 194, the number of sectors which are required for holding copies of file allocation tables, which must contain exactly enough sectors to hold all cluster entries for future growth of the partition, and the number of data clusters in the modified partition are determined (see Column 20, lines 52-65). Reserving a number of sectors on a disk for holding file allocation tables and the number of data clusters is clearly different from connecting recordable clusters in advance of starting data recording of new data which does not yet exist on a recording medium when the required area for recording the new data is unknown before starting data recording of the new data. Accordingly, the characteristic determination step 194 of Ruff et al. does not disclose, suggest or even contemplate a method for constructing a file structure, when recording new data, on the disk recording medium in which recordable clusters are connected in advance of starting data recording, as recited in claim 16.

The partition resizing method of Ruff et al. also includes an identifying step 198 which identifies all data areas in a selected partition that will not lie within the data cluster area of a proposed modified partition (see Column 22, lines 31-37). That is, all existing data in existing areas of a partition are identified in the identifying step 198 when such existing data will not lie within the data cluster area of a proposed modified partition. After the identifying step 198 identifies the data areas that will not lie within the data cluster area of a proposed modified partition, Ruff et al. discloses that the existing data within these areas must be cleared by being safely moved to locations that are inside the boundaries of the data cluster area of the modified partition according to known data preservation techniques (see Column 22, lines 33-37). Therefore, under the partition resizing method of Ruff et al., if a selected partition boundary is being changed to expand or reduce the size of the selected partition, the existing data in the modified area of the partition must be moved by being relocated, and the modified area must be

cleared when the size of the partition is being modified (see Column 23, line 49 to Column 24, line 4).

Further, according to the partition resizing method, Ruff et al. discloses that "[d]uring a moving step 200, the data cluster regions identified during the identifying step 198 are cleared by moving the data to a safe location on the disk 10" (see Column 24, lines 5-7). Ruff et al. discloses that several known methods of moving clusters on the partition may be used in the moving step 200. For instance, Ruff et al. discloses that clusters are identified from the region which must be moved, a free cluster is then found in which the data from the identified cluster is copied thereto, and then the file allocation table is updated to reflect the data being copied to the free cluster (see Column 24, lines 7-24).

The Examiner relies on the above-cited portion of Ruff et al. to conclude that Ruff et al. discloses that the partition resizing method constructs a file structure in which recordable clusters are connected in advance of starting data recording. However, this portion of Ruff et al. merely discloses that when a partition is to be resized, a required area for copying existing data is cleared before the data copying is started, and the structure of the copied file is made in advance of starting the data copying.

In other words, the partition resizing method of Ruff et al. merely discloses that the number of sectors which are required for holding copies of allocation sheets of files (data) which are already recorded on a disk as well as the number of data clusters in the changed partition are determined in the characteristic determination step 194 so as to modify the size of a partition. If existing data in the partition to be modified cannot fit within the size of the modified partition or the existing data in the partition will encroach upon an area which is reserved for "future growth", the existing data is moved by being relocated, and thus, the area of the partition in which the existing data previously occupied is cleared.

However, the partition resizing method of Ruff et al. is markedly different from preventing the destruction of a file and the loss of data when an abend occurs by constructing a file structure, when recording new data, on a disk recording medium in which recordable clusters are connected in advance of starting data recording.

As described above, the present invention connects a recordable area in advance of starting data recording for an indefinite required area when recording new data which is not yet recorded on a disk, and thus, a recordable area is connected in advance of starting data recording for an indefinite required area when recording such new data. Therefore, by constructing a file structure, when recording new data, on the disk recording medium in which recordable clusters are connected in advance of starting data recording, as recited in claim 16, even if data recording is suspended due to an abend such as a power failure, data which would have been recorded but for the abend exists as a part of the file and thus can be reproduced.

Ruff et al., however, clearly does not disclose, suggest or even contemplate constructing a file structure, when recording new data, on the disk recording medium in which recordable clusters are connected in advance of starting data recording, as recited in claim 16. Instead, Ruff et al. merely discloses identifying existing data in an area of a selected partition whose size is to be modified, moving the existing data from the region, and updating a file allocation table containing the relationships between the moved data and the clusters.

Therefore, Ruff et al. clearly fails to disclose or suggest each and every limitation of claim 16. Accordingly, the Applicant respectfully submits that claim 16 is clearly not anticipated by Ruff et al. since Ruff et al. fails to disclose each and every limitation of claim 16.

In item 4 on page 4 of the Office Action, claims 18 and 22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ruff et al. in view of Cizmic et al. (U.S. 4,103,338). In addition, in item 5 on page 5 of the Office Action, claim 24 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Ruff et al. in view of Muratani et al. (U.S. 6,119,109). Further, in item 6 on page 6 of the Office Action, claims 25 and 26 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ruff et al. in view of Muratani et al. and Cizmic et al. These rejections are believed to be moot with respect to claims 22 and 24-26 in view of the cancellation of these claims.

In the second paragraph on page 9 of the Office Action, the Examiner asserted that the Applicant cannot show nonobviousness by attacking references individually where the rejections are based on the combination of references. The Examiner is respectfully reminded that if none of the combined references disclose or suggest each and every recited limitation, no obvious

combination of the applied references would result in the claimed invention since the references, either individually or in combination, fail to disclose each and every recited limitation.

Accordingly, for the following reasons, the Applicant respectfully submits that neither Cizmic et al. nor Muratani et al., either individually or in combination, cure the deficiencies of Ruff et al. for failing to disclose or suggest constructing a file structure, when recording new data, in which recordable clusters are connected in advance of starting data recording, as recited in claim 16.

Cizmic et al. merely discloses a disk drive in which the format information of digital data is a sync byte of a transport packet. Cizmic et al., however, does not disclose, suggest or even contemplate constructing a file structure, when recording new data, on the disk recording medium in which recordable clusters are connected in advance of starting data recording, as recited in claim 16. Accordingly, Cizmic et al. does not cure the deficiencies of Ruff et al. for failing to disclose each and every limitation of claim 16.

Muratani et al. discloses an information distribution system and billing system for use with the information distribution system. Muratani et al. discloses that the billing system must be interrupted if there is a temporary interruption of the received data. Muratani et al., however, does not disclose, suggest or even contemplate constructing a file structure, when recording new data, on the disk recording medium in which recordable clusters are connected in advance of starting data recording, as recited in claim 16. Accordingly, Muratani et al., similar to Cizmic et al., does not cure the deficiencies of Ruff et al. for failing to disclose each and every limitation of claim 16.

Therefore, neither Cizmic et al. nor Muratani et al. cure the deficiencies of Ruff et al. for failing to disclose or suggest constructing a file structure, when recording new data, on the disk recording medium in which recordable clusters are connected in advance of starting data recording, as recited in claim 16.

Accordingly, the Applicant respectfully submits that claim 16 is clearly allowable over Ruff et al., Cizmic et al. and Muratani et al. since Ruff et al., Cizmic et al. and Muratani et al., either individually or in combination, fail to disclose each and every limitation of claim 16. Furthermore, it is submitted that the distinctions are such that a person of ordinary skill in the art

at the time the present invention was made would not have been motivated to modify Ruff et al., Cizmic et al. or Muratani et al. in such a manner as to result in, or otherwise render obvious, the present invention as recited in claim 16. Therefore, it is respectfully submitted that claim 16, as well as claims 17-19 which depend therefrom, are clearly allowable over the prior art as applied by the Examiner.

In view of the foregoing amendments and remarks, it is respectfully submitted that the present application is clearly in condition for allowance. An early notice thereof is respectfully solicited.

If, after reviewing this Amendment, the Examiner feels there are any issues remaining which must be resolved before the application can be passed to issue, it is respectfully requested that the Examiner contact the undersigned by telephone in order to resolve such issues.

A fee and a Petition for a one-month Extension of Time are filed herewith pursuant to 37 CFR § 1.136(a).

Respectfully submitted,

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July 13, 2004